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Arts

Context & Climate Change

Lessons from Barrow, Alaska

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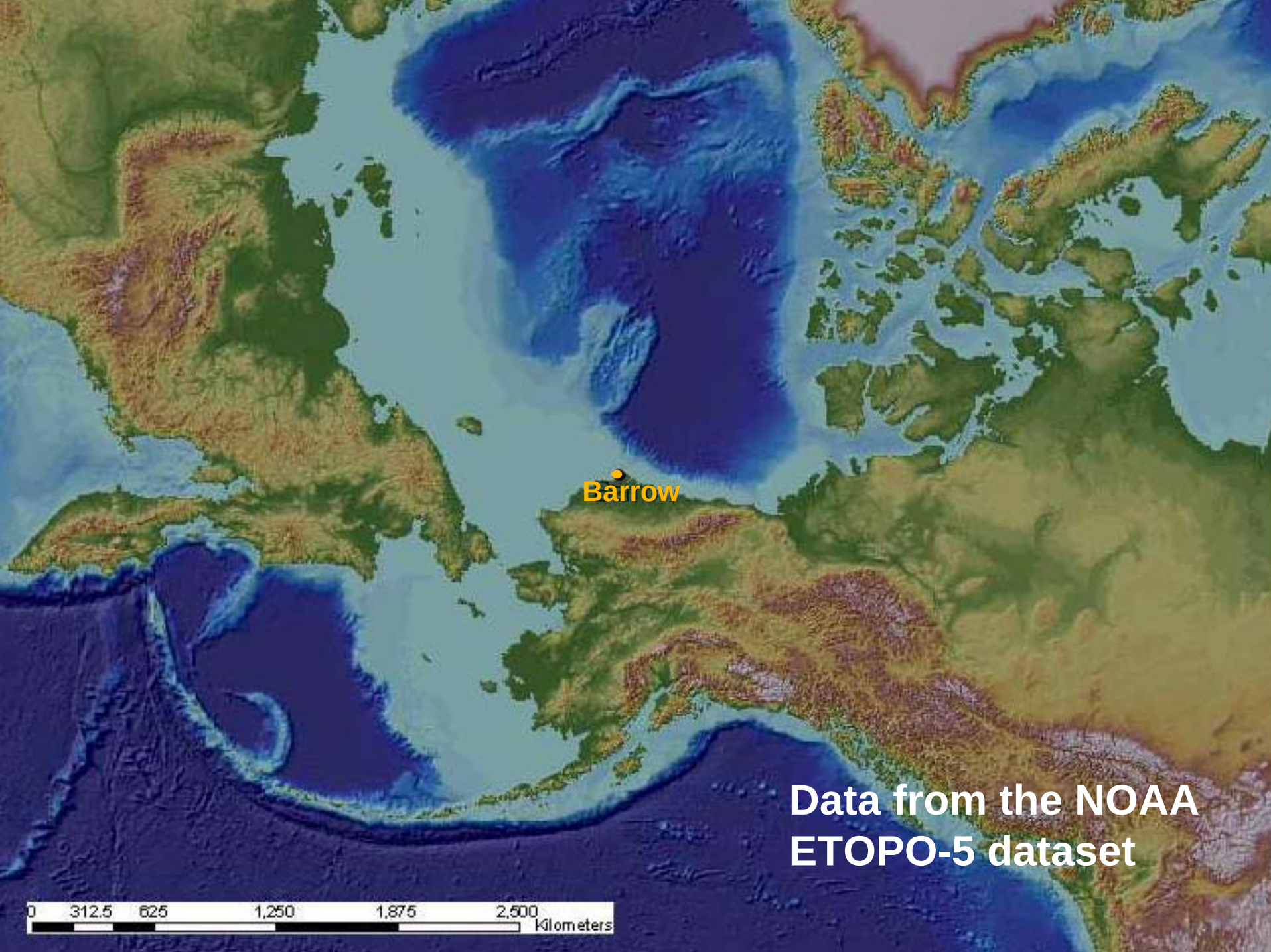
National Science Foundation


Barrow
Data from the NOAA ETOPO-5 dataset
0 312.5 625 1,250 1,875 2,500
Kilometers

Our Integrated Assessment

- **Designed to expand range of informed choices**
- **Focuses on Barrow's climate-related priority**
  - Vulnerability to coastal erosion & flooding
- **Report research & seek guidance annually**
- **Our approach has been field-tested for 5 years**
- **It is also intensive**
  - Centered on one community, Barrow
  - Comprehensive in range of vulnerability factors
  - Integrative in focus on extreme events

Extreme Events in Barrow

- **4 to 6 October 1954**
- **3 October 1963 – the great storm**

  Fewer big storms, mid-1960s to mid-1980s
- **12 and 20 September 1986**
- **25 February 1989**
- **10 August 2000**
- **5 and 8 October 2002**
- **29 July 2003**

3 October 1963

Photo by Grace Redding

1. Information Needed

- **Engage local knowledge and interests**
  - Regional, national, and global info does not
- **Relevant to decisions the local community controls or can influence**
  - North Slope Borough controls some decisions
  - Army Corps of Engineers and other agencies
  - Alaska Congressional delegation
- **Users need context-specific information**

2. Evaluation of Research

- **Barrow trend data mostly satisfactory**
  - Temperatures, winds, sea ice, erosion, flooding, development, and policies
- **Models help clarify dynamics**
  - Storm-track – ice-edge relationship, e. g.
- **Projections are problematic**
  - Profound uncertainties exist at local level
  - Many factors interact in extreme events
  - Adapt policy responses to high uncertainty

3. Examples of Information Used

- **Reconstruction of October 1963 storm**
  - Planning emergency management exercise
  - Promoting & platting an inland evacuation route
  - Selecting a hospital site outside 1963 flood area
  - Designing the $62 million Barrow GCCR facility
- **Observations on erosion & development**
  - Opening agenda beyond beach nourishment
- **Long-term wind and erosion observations**
  - Requested by NSB/ACOE feasibility study

4. Communicating Information

- **Substantive information must be relevant**
  - Climate change adaptation accepted in Barrow
- **Constructive if not necessary to…**
  - Select one priority problem of the community
  - Provide common focus of attention
  - Work with leaders & the public over time
  - Renew trust & credibility in various ways
- **Each big storm renews interest**
  - It opens a window of opportunity

Is Global Warming affecting your future??

You bet . . . if you're utilizing the barge services of Bowhead Transportation

Because of the gradual shift in weather patterns and ice movement, Bowhead will accelerate it's sailing departure by two weeks to take advantage of these changes. Most of you frequent shippers are accustomed to a July 1 cargo receiving deadline. Beginning in year 2005, the seasonal barge to the Arctic coastal villages will accelerate this cargo receiving deadline to June 17 with an anticipated voyage date of June 24.

There are several reasons for this change.

Help mitigate the need for rate hikes caused from increased operating costs due to weather delays

Start our southward sailing long before the return of the Bowhead whales to avoid migration disturbances.

Bowhead Transportation Company

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5. Evaluating Outcomes

- **Rely on unobtrusive observations**
  - Requests for our data and other research
  - Use of our research in decisions
  - Continued willingness to cooperate
- **Monitor range of policy choices available**
  - In accord with our purpose
- **Beware of performance measures**
  - A history of dysfunctional consequences

6. Opportunities for Research

- **Factoring global problem of adaptation**
  - Each local problem is more tractable
  - Working in parallel can maximize experience
- **Adapting our intensive approach**
  - Other communities as they become ready to cope with their climate adaptation problems
- **Networking similar local communities**
  - Maximize experience available to each
  - Clarify their common interest for adapting state and federal programs to their needs

Working Conclusions

- **Science cannot significantly reduce profound uncertainties at the local level**
- **Sound policy incorporates uncertainties & multiple community values & constraints**
  - A sound policy process adjusts these policies
- **The community is best positioned to decide its policies & take responsibility**
- **In short, context matters in adaptations**

Contributors & Colleagues

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